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Editorial

The New Year—The Dawn of a New Era.

"HEALTH", has completed fifteen years now and is commencing its sixteenth year on the 1st day of January 1938. On this happy occasion, we offer our hearty greetings to all our contributors, subscribers and advertisers, who have stood by "Health" so long and contributed to its success.

The New Year, we are glad to say, is the dawn of a New Era. It is an undisputed fact that in all the countries of the world, that part of the population living on the land and producing the essential foodstuffs for all, has been too often neglected. While, since the termination of the Great World War of 1914, the Governments of all other countries have been taking active steps towards 'the bettering of the social, economic, health and cultural conditions of the country-dwellers', there have been supineness and stagnation in India alone. With the advent of the Congress to power, however, in seven out of the eleven provinces of India, recently, cataclysmic changes are taking place in all spheres of Governmental activities. The toiling and the teeming millions who constitute the masses in this country are now having their turn, in the matter of amelioration of their lot. The centre of gravity has now been shifted from towns to villages. For the first time in the annals of the British administration in our Province and in one or two other Provinces too, a

medical politician has been placed in charge of the Medical and Public Health Portfolios. This is as it should be. For, he it is, who can find for himself, the defects and drawbacks in the Medical and Public Health administration and seek proper remedies without having to depend on outside agency, for expert advice, which cannot be easily set aside in case of difference. The very first act of the Ministry consisted in providing *protected water-supply* for a village in every Taluq, where good water for drinking cannot be had or people have to go a long distance to fetch it. Thus, it is expected in the course of a few years, that all the villages in our Presidency will be provided with good drinking-water. This will certainly shut out the annual visitations of Cholera and other alimentary diseases, which sap and undermine the villagers' vitality. The second beneficial measure the Ministry has undertaken, is *Prohibition*. This is being tried in one District this year and will be extended to the whole Presidency in the next few years. The mental, moral, physical and economic gain accruing from Prohibition is too patent to need iteration here. Thirdly, comes the question of *Education*. "The teaching of health knowledge and health practice should be one of the major objects of education in all schools and colleges. This is a matter of profound importance. It must be remembered that Education may 'unfit' as well as 'fit' a man's life"—this is the finding of the Conference of Far Eastern Countries on Rural Hygiene, recently held at Baudoeng (Java). The Congress Ministry has not forgotton *health education* in its scheme of free and compulsory Primary Education. The Wardha Scheme provides the following syllabus for teaching of hygiene in primary schools :—

"(*a*) Personal hygiene, cleanliness of teeth, tongue, nails, eyes, hair, nose, skin, clothes.

(*b*) Cleanliness of the home and the village, sanitation, disposal of night soil.

(*c*) Pure water ; the Village-Well.

(*d*) Pure air ; the function of trees in its purification, proper breathing.

(*e*) Food, hygienic and unhygienic ; balanced diets.

(*f*) First Aid and simple remedies.

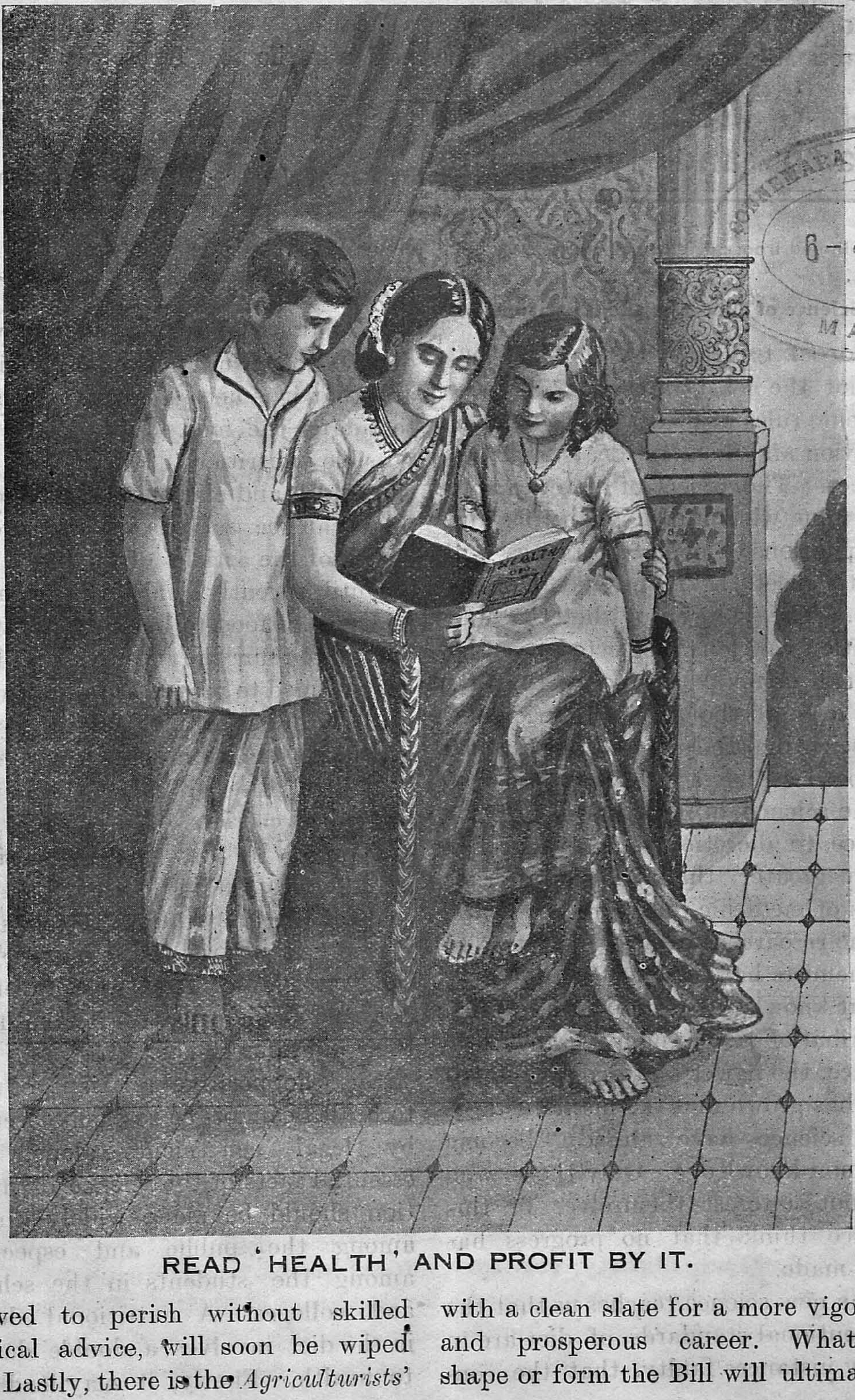
(*g*) Common infections ; contagious diseases, how to safeguard against them.

(*h*) Purity of conduct as a preservative of health."

Physical Culture, such as games, athletics and drill are not lost sight of. *Physiology*—the human body and its function—also finds a place in the curriculum of studies. In order to arouse sanitary conscience in a villager, sanitary principles must be taught in childhood. So, the Wardha Scheme is proceeding on right lines and if it comes to be introduced, throughout India, we may safely predict a healthy and wealthy land for the coming generation to live in. Fourthly, the Ministry is putting up *Radio Stations* in rural parts. This is the best means of conveying Scientific knowledge to the masses, without unnecessarily undergoing the trouble and expense of travelling. Fifthly, there is the proposed extension of *Rural Medical Relief* scheme. Already, during this year, 19 more rural dispensaries have been opened. These medical men will also have health duties to perform

within their areas. Thus the stigma that a greater part of the people living in this densely populated country are

Debt Relief Bill, which is now on the legislative anvil. This is intended to rehabilitate the peasant and start him



READ 'HEALTH' AND PROFIT BY IT.

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allowed to perish without skilled medical advice, will soon be wiped out. Lastly, there is the *Agriculturists'*

with a clean slate for a more vigorous and prosperous career. Whatever shape or form the Bill will ultimately

take, there can be no two opinions about the necessity and urgency of such a measure.

All these beneficial acts were possible in such a short time, because, the Congress Ministry had a free hand and had the peoples' backing up. A new era has thus begun and we trust the people will take greater interest in health matters and strive to become a healthy, wealthy and prosperous nation in the near future.

Health and Nutrition

By Rao Bahadur Dr. T. S. Tirumurthi,
B.A., M.B., C.M., D.T.M. & H.,
—Professor, Medical College, Madras.—

(Continued from page 229 of Dec. '37 issue.)

Science of Dietetics and Nutrition

I PROPOSE to deal with the last but not the least important of these hygienic rules of life. The science of nutrition and dietetics deals with this subject. The object of dietetics is to determine what kinds, quantities and combinations of food substances will exactly meet the requirements of the body. The subject of dietetics and nutrition was long neglected even by medical men. I am sorry to state that even in the medical curriculum, the scientific study of this subject has not been included. But the progress of the science of nutrition in all that relates to dietetic matters has been much greater than in many other fields of medicine during recent years.

The researches of physiologists and biochemists have added considerably to our knowledge of nutrition. With contributions from many branches of science, the newer knowledge of nutrition has grown and the main facts of this science have already become common knowledge. Only those, who do not interest themselves in this science think that no progress has been made.

The new science teaches us that the conventional standards of diet are in many instances faulty, that the conventional standards of adequacy of diet do not ensure optimum nutrition and that it is necessary and possible to adapt the food supply to the best possible nutrition. It teaches how the health and efficiency of the individual can be served by the proper choice of the articles of food.

Until recently, only the negative relations of food to health were stressed more than the positive and laws were framed to prevent adulteration of food with deleterious substances, to prevent them from being contaminated with disease germs and thus becoming carriers of disease to the consumers, to prevent decomposition or deterioration in foods or articles sold for the preparation of foods etc. By pure food laws, the sale of deleterious articles of food was prevented and the public were protected from their injurious effects.

But the positive relations of food to health cannot be so easily secured by legal enactments alone. The essential facts of the science of nutrition should be made widely known among the public and especially among the students in the schools and colleges. A nutritional defect in the diet involves a double danger to health. Firstly, it may lead to a

deficiency disease and secondly, to an increased susceptibility to infection.

Essentials of an Adequate Food Supply

The essentials of a chemically adequate food supply are :–(1) a sufficient amount of the energy-giving foods—carbohydrates and fats in an easily digestible form. (2) protein, animal or vegetable, sufficient in amount and appropriate in kind : (3) sufficiency of the required mineral elements and (4) a sufficient quantity of the essential vitamins.

The essential ingredients of food are therefore of five kinds—carbohydrates, fats, proteins, mineral salts and vitamins. Every food article which we obtain from Nature contains some of these essential ingredients but no single food contains them all in just the right amount for human consumption. We have, therefore, to learn how to mix them, so that our daily food contains all these five essential substances of the right quantity in the correct proportion.

Importance of Mineral Elements and Vitamins

We owe to the recent advances in the science of nutrition, the important part played by mineral elements, such as calcium, iron, iodine etc., and by substances which are known as vitamins. Vitamins are powerful activating agents, which regulate nutritional processes but which occur in food-stuffs in such infinitesimal quantities that they cannot supply any appreciable material for combustion or tissue building. The vitamins therefore, are not strictly nutrients but are only accessory food factors. Vitamins are present in many natural food-stuffs. They are of many kinds. The chemical nature of some of them has been ascertained. They are, in fact, not only merely accessory factors in nutrition, but essential accessory factors. If the food is devoid of vitamins, disease manifests itself. Life is impossible without vitamins. Though they are so essential, they occur in food-stuffs only in infinitesimal quantities. Hence, the great importance to see that they are not destroyed in the preparation of the food-stuffs for human or animal consumption.

The energy is supplied mainly by the carbohydrates and fats. The building materials are the proteins and mineral salts. The great builder is the body's vital force and his assistants are the vitamins. They are, therefore, essential to life, for the building and repair of the body. Like the minerals, the vitamins are widely and irregularly distributed in food substances. The preparation of food-stuffs for consumption is quite as important as the provision of the food essentials in sufficient quantities.

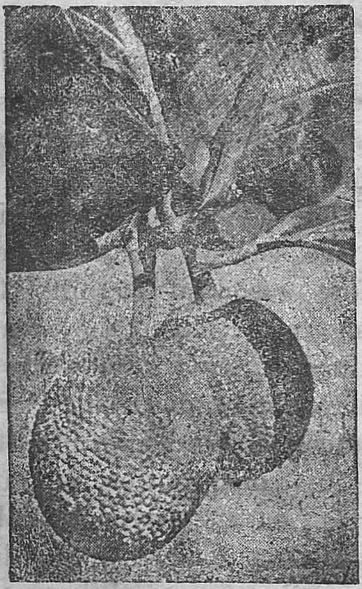
Deficiency Diseases

It has been proved that various diseases are caused owing to deficiency in the diet of mineral elements. Such diseases are anaemia, goitre, caries of the teeth, improper digestion, defective formation of bones etc. Deficiency of vitamins results in stunted growth, beriberi, rickets, scurvy, certain skin diseases and eye diseases etc.

There is a growing consensus of opinion that tuberculosis, which is one of the most common among the fatal diseases, is a nutritional deficiency disease. Certain forms of anaemia have been recognised among the group of nutritional deficiency diseases.

Guides for Food and Food Economics

Food should, of course, be varied. It must be rendered palatable and made attractive for the table. But in all these culinary preparations, it should be remembered that the mineral salts and vitamins are not destroyed or thrown out. A well-balanced diet should contain all the five food essentials in their proper proportions. Their quantities should be adapted to the age and occupation of the individual.



Eat Vegetables for Health.

Hunger and appetite cannot be regarded as guides to proper nutrition. Customs and traditions in the matter of diet are the result of the accumulated experience of the race. They are useful in preventing the individual from giving himself away to the unrestricted pleasures of the palate or the whims of appetite. But it is wrong to assert that such customs and traditions are the best from the point of view of optimum nutrition.

It has been said that "economics knows the price but not the value". But this can no longer be said of food economics, for the science of nutrition concerns itself with both the price of food and its nutritional value.

Protective Foods

Our diet is more often deficient in calcium and vitamins than in the other ingredients. But these are very necessary for a positive or buoyant or better than average health. These factors are present in fair quantities in milk, fruits, vegetables and eggs. These foods have therefore come to be known as protective foods. From the science of nutrition, we learn that we ought to draw an increased proportion of the needed calories or energy from these protective foods. These protective foods should be given greater prominence in the food budget. The liberal use of these protective foods will for a longer period preserve the characteristics of youth. Their use will prevent us from aging so quickly as we do now. This has been repeatedly proved by well-controlled experiments.

Preparation of Foods

The scientific preparation of foods can be very briefly stated in three simple rules :—

(1) Food should be eaten as far as possible in its natural state and its fresh state.

(2) Conservative methods of preparation should be employed so that the mineral elements and vitamins are not lost.

(3) Heating of foods should be limited to make them palatable and digestible, because undue heating destroys the vitamins.

The lesson which is learnt from the science of nutrition for the choice of food articles is that we should choose

a larger quantity of them from among the protective foods—milk, fruits, vegetables including green leaves and eggs.

Sun's Rays and Vitamins

Another lesson is that the influence of the sun's ultra-violet rays on the skin helps the formation of one of the important vitamins in the body. In the absence of such natural formation of this vitamin, especially in countries where sun light is limited, during certain seasons of the year and where the atmospheric conditions prevent the ultra-violet rays from having their influence on the body, the vitamin has to be supplied artificially by the administration of such substances as Cod liver oil. In our country, the need is to protect ourselves from the harmful rays of the sun. The proposed change of the school hours is a step in the right direction.

Health and Dress

In this connection, I might also refer to the unhygienic clothing of many of our children. Over-clothing or the use of too many articles of apparel is unsuited to a hot country like ours. The dress should be very simple, light and airy and capable of absorbing perspiration. In our country, it is not a pleasure to dress. The body does not feel at ease inside thick or heavy clothing. When the body is not at ease, the mind cannot concentrate in studies.

Relation of Food to Health and Longevity

Even though a diet may be considered adequate, slight improvements in it can bring about better than average condition of nutrition and health. The well marked relation of food to positive health and longevity is no longer a matter for speculation. A full measure of health, happiness and efficiency in the nation can be secured only when the people can afford to buy enough food and enough of the protective foods mentioned above.

The saying, 'leave things well alone', is not applicable in matters connected with health. We should attempt to improve the average health to a better than average health. I am reminded of the epitaph which a gentleman desired to be put on his grave "I was well; I wanted to be better; I am therefore here". If instead of drugging himself, he had applied the knowledge of the Science of Nutrition to his daily dietary, he would have become better and should have prolonged his life.

Increasing the Supply of Protective Foods.

It is very easily said that we should include in our diet a liberal supply of the protective foods. I am not blind to the difficulties in procuring these foods. Even if we have the means for buying them, clean good milk is difficult to procure in cities even for the feeding of infants and children. In the villages, the indebtedness of the villager and his famished family and stunted cattle and much restricted area of pasture land are sufficient evidences of the quality and quantity of milk obtainable there. There is not even one city in our Presidency (excluding Mysore Province) which can boast of a decent dairy. Milk and milk products are not available at all hours of the day or night as in the cities in the West. Rich creamy and certified milk can be bought at any time and in practically every street, you will find a 'dairy products shop' and a

'fruits and vegetable stall'. Milk. fruits and vegetables are kept in refrigerators and they keep fresh for many days. Ours is an agricultural country but we obtain better milk, better fruits and better vegetables in the industrial cities of the West. Why should this be so ?

Does it redound to the credit of an agricultural country like ours to import milk, milk products, artificial infant foods, prepared adult foods, canned fruits and vegetables and many other other tinned and bottled prepared foods ?

Causes of Deterioration of Supply of Protective Foods.

Why have we lost our reverence for the cow ? The cow is the foster mother of our growing children. In how few families, the cow or the she-buffalo is kept now-a-days,-even in the villages-by those who can afford to keep the animals ?

The mother has deteriorated in her capacity to nurse the child at her breast. The cow has been considerably displaced by imported milk preparations. Fruits are grown only in limited quantities and there is little attempt at preserving them for home consumption but impetus is given for exporting them to other countries. The vegetable garden in the backyard has been neglected or those plants have given place to crotons. Agriculture is still primitive. Poultry keeping is yet in its infancy. Sheep rearing and cattle farming have not become such great industries as in other countries.

We know refined and polished milled rice is bad for health and may lead to neuritis and beri beri, if the food consists mainly of rice and very little of protective foods. But you cannot get hand pounded rice for love or money.

Vegetables are costly and there is not such variety in them in the villages or towns. This sorry state of affairs can be tackled only by the Government. The villagers were happy once in tilling the soil and tending the herds. What a contrast to the villagers of today !

But a knowledge of the Newer Conception of Nutrition ought to enable many of us to help our growing children to a better state of nutrition by giving them more of the protective foods and to keep ourselves young in spirits and in a better than average state of physical fitness by the inclusion of such protective foods in our daily diet.

Eldest Child Longest Lived

The children of old or ill parents are not so strong nor so well-poised as those born when their parents are in good health.

Usually the eldest child in the family lives longest and is more likely to become distinguished. The order in the family, however, is not so important as the health of the parents at the time of the child's birth.—*The Treasure Chest.*

Physical Education*

By M. Bapineedu,
B.Sc., (Cornell,) M.Sc., (California).
— Parliamentary Secretary for Public —
Information, Madras.

Ladies and Gentlemen,

Allow me to thank you for inviting me to preside on this very happy occasion. At the very outset, I would like to emphasise that no education can be complete without adequate physical education. Moreover, physical education aims not only at the training of the body, but also of the mind. The education in the class-room, co-ordinated with that in the play-ground can perfect the physical, mental and moral training. Such an education is intended to build up the perfect nation. In the present day world, in the competition between nations, the struggle for freedom is so keen, that the nature's check of the survival of the fittest is coming to play an important part. So, a physically strong nation is a vital necessity. In India, this struggle is all the more acute because the amount of food available for the large mass of population is so little, that the pressure of the population on the soil is not only felt among human beings but also among cattle. It is no exaggeration to say that men and cattle are competing with each other for the available cultivable soil.

Place of India on the Health Map of the World

Let us see where we stand on the world's Health map. The country is ridden with disease, poverty and ignorance, which are the three chief factors that act and interact to produce bad health. A glance at the condition of the other nations will show that this country is not only a slave country, but a sick nation as well. India leads in the nations of the world in the abnormally high death rate, infant and maternal mortality rates, and the very low expectation of life at birth. The average span of life of the Indian is 23 years whereas it is 54 in England and 58 in New-Zealand. The infant mortality in India is so abnormal that in most urban areas it may be said that for every four babies born, one dies by the end of the first year, and two by the end of the 5th year of life. Our population is halved by the time it reaches the 5th year of life. What a great loss of infant life and human energy! Let us concentrate our attention on the saving of our race at the young ages, the pre-school and the school child. The following statistics will convince anyone about these facts:

Figures for 1932

Country	Death-rate	Infant Mortality rate
India	21.6	169
England and Wales ...	12	65
New Zealand ...	8	31
U. S. A. ...	10.8	58
Australia ...	8.7	41

* Presidential address delivered at the Vizagapatam District Inter Schools Athletic League Sports Prize Distribution meeting held at Yelimanchilli on 4-12-37.

Expectation of Life at Birth

Australia	... 57	France	... 48
Denmark	... 56	Germany	... 47
Norway	... 56	Italy	... 44
Sweden	... 55	Japan	... 43
America	... 51	India	... 22
England	... 51		

Sports and Social Life

As I said previously, sports go a very long way to build up a strong nation. They not only improve the physical condition of the boys but also transform them into good social beings. They impart in him a sense of discipline and fairplay or what you call sportsmanship. The disciplined life obtained in other countries where sports occupy a very important place in their lives, bears testimony to this fact. A most obvious example of this discipline is their way of obtaining tickets at railway stations. They all stand behind one another in the order of their arrival and the first come will be first served. This is very unlike the jostling and pushing and elbowing we find in our stations and theatres which profit none but result in disorder.

It is only on account of this discipline that they are at the top today in the world. This is also the secret of success of Japan, which was the first to adopt the best among others. The spirit of equality and fellowship that is engendered among boys on the play-ground continues in after-life, and makes them useful members of democracy. Sports know no caste, creed or colour and contribute to national solidarity.

This is why sports are given such a prominent place in the scheme of life in European countries. In the United States of America, unless a student passes the physical fitness test and medical examination also, in addition to his academic qualification, he is not given a degree. Physical training and military training are made compulsory for the students. Regarding health of school children, all boys and girls in schools should first be taught hygienic principles aud whether the pupil passed the examination or not, at the end of the 4th year, he should have complete knowledge of health and hygienic principles. Otherwise, this cannot be imparted at a later age. Physical education like hygiene is equally valuable and instruction in physical culture should be imparted at an early age. The adults should be on the top of this, cultivate civic conscience and serve more and more the cause of public health of the town.

Physical Education in our Country

What is the importance given to sports and physical education in our country? In U. S. A. the National Education Association has defined its seven objectives of Education as follows in the order of their importance :—

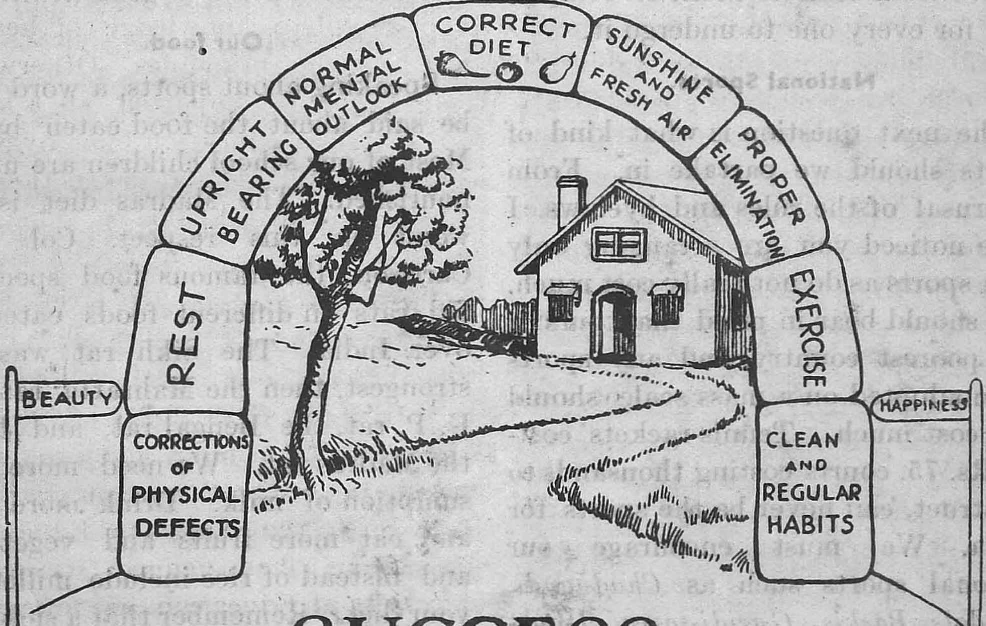
(1) Good Health. (2) Good citizenship. (3) Good Character. (4) Worthy use of leisure. (5) Worthy home membership. (6) Command of fundamental processes ; and (7) Vocation.

But in our country, the order is topsy-turvy. Vocation is the prime consideration, and physical well-being of the student is sadly neglected. Very little importance is given to the health of the students. Physical instructors are in practice, mere ornaments, and very little percentage of the boys take part in games and sports. If the above objects of education are to

be achieved, all this must be changed. The health of the students should be made the primary concern of our system of education. Physical Education should be given equal if not greater importance as the vocational education. National Y. M. C. A. is conducting a college of physical education at Madras on practical and scientific lines. The good work deserves our attention and encouragement. Scout-training, in secondary schools, and military training in colleges must

only 31, or 15 per cent were found to be healthy.

Dr. Rajan speaking at the Presidency College on Physical Education on the 19th October stated : " Medical Officer during the inspection of the Presidency College said that 309 students were examined by him ; 50 per cent not nourished, large number with weak hearts ". He said that there was tremendous degeneration during the last five decades. It may be said that they progressed intellectually ; if this



SUCCESS
ARCH OF HEALTH

be made compulsory as they alone create among boys, the idea of sound and responsible citizenship and lay the foundation for a future national militia. Medical examination of all students at the beginning of each term must be enforced. The necessity for the last suggestion is borne out by the results obtained of an examination conducted at the Saidapet school, which revealed the startling figure that out of 210 children examined,

process were to go on, a caricaturist would depict a student having merely a brain and no body.

The popular heroes of the colleges in Western Universities were not those who won prizes but those who did well in sports. Even in our country the best sportsmen are now - a - days favoured with best jobs and promotions. Health is a dynamic thing not passing the examination. It is not freedom from disease. Health is

essentially a human product and by observing the laws of Nature health can be acquired. My advice to you, therefore, si to take very active part in sports of all kinds, grow up into strong sturdy young men, broad in chest and tough in muscle. Play well, eat well, live well and die well. Join the national scout organisation if you have already one, and start one if you have not. Unfortunately for our country, imparting of military training is not in our hands, and if it were, I would like to make it compulsory for every one to undergo it.

National Sports.

The next question is what kind of sports should we partake in. From a perusal of the rules and byelaws, I have noticed you are arranging only such sports as do not really cost much. We should bear in mind that ours is the poorest country, and any sports to be adopted on a mass scale should not cost much. Tennis-rackets costing Rs. 75, courts costing thousands to construct, can never be the sports for India. We must encourage our national sports such as *Chadugudi*, *Dundals*, *Baskis*, *Guridi-samu*, *Uppabaddi*, *cross country runnnig* and *walking races* which cost nothing, but which give vigorous exercise to the players. Exercises on the horizontal and parallel bars should also be practised. Training must be given in *wrestling* and *jujitsu*. *Breathing exercises*, *suryanamaskars*, *Asanas*, *swimming* also should be taught and must form part of physical training. Prizes should be given for perfect bodies which exhibit ideal developments of body and muscle and also for a healthy boy in the school. You may have also all the sports you outlined in your rules as they cost little. We should all press for more play-grounds and public parks which also are conducive to good health.

Our food.

Speaking about sports, a word must be said about the food eaten by us. Most of our school children are undernourished. The Madras diet is the worst in this respect. Col. MacCarrison, the famous food specialist fed rats on different foods eaten all over India. The Sikh rat was the strongest, then the Mahratta rat, the U. P. rat, the Bengal rat, and lastly the Madras rat. We need more consumption of milk. Drink more milk and eat more fruits and vegetables and instead of rice include millets in your diet. Remember that a sick man is a liability on the nation. India's hope lies in her youth.

In conclusion, I request you all to make your bodies temples of God by having a clean body and clean mind.

"Whereas man is held to be the wisest of all creatures, he seems to be the most foolish. Where other creatures have smarted, they will come no more ; the fox returns not to the snare, nor the wolf to the pitfall. But man returns to the same sins, and will not take warning until he is utterly ruined."—*Good Health* (*Lond.*).

PHYSICAL FITNESS

—By Khagendranath Chatterjee—

M B., Lt. I.M.S.,(Retd.), Chinsura, Hoogly.

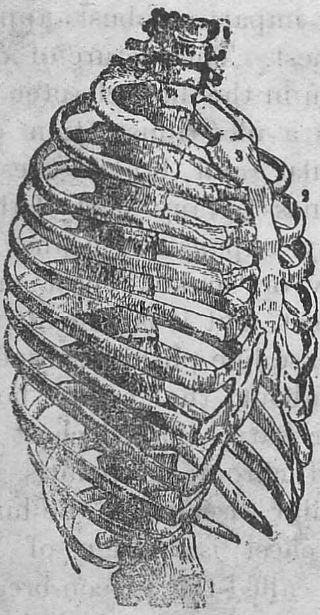
(Contd. from p. 206, Vol. XV, No. 11, Nov. '37 issue of Health ').

The Chest.

The chest is the upper part of the trunk. In Anatomy, it is called the Thorax, which is a better name, because chest proper forms only the front and sides of the Thorax, while the rear portion is called the Back. The chest of a healthy person should be broad and raised; it gradually becomes narrow near the waist, from which place begins the Abdomen, the lower part of the trunk. The shoulder is the uppermost and widest part of the chest, on account of the attachment of the arms. The girth of the chest should always be wider than the girth of the waist, and that of the abdomen. It is a physical disqualification if the width of the abdomen or belly as it is called, becomes greater than that of the chest. The measurement of the chest is taken over the nipples in the male, and that of the abdomen over the navel. The difference between the two measurements may be ten inches or more. The average width of the chest of a young man of moderate build may range from 30 inches to 40 inches. The chest in a robust man should be uniformly wide, muscular and heaving, that is, should expand evenly with each act of breathing. There are two conspicuous muscles on the front and upper part of the chest which are known as the Pectorals. These cover the entire chest; one on each side with a central groove between them. During exercise, these muscles stand out and impart a robust appearance to the chest. The picture of a strong-built man in the first chapter of this series, is a nice illustration of such a muscular and broad chest wall. Unequalness of any part of the chest or faulty expansion means disease. A hollow or sunken chest may be a born defect, but it is suggestive more of a disease like phthisis, especially a hollow about the collar bone. A round or barrel-shaped chest is also a sign of chronic bronchitis, asthma and similar diseases of the lungs. A narrow chest is a sign of Rickets, which is called the pigeon-breast. It has been previously stated that deformities of the chest take place as a result of chronic obstruction in the nose and throat in boyhood, in the chapter on Nose and Throat.

Beneath the muscles, are the ribs which make the bony frame of the chest, and protect the lungs, the heart and other organs under them. The ribs are slender, curved pieces of bones and are twelve in number on each side. In the front of the chest, they are fixed to a small flat bone called the Sternum or the Breast Bone through some small pieces of soft bones called Costal Cartilages. The 11th and the 12th ribs are not fixed, and their points can be felt at the sides of the lower part of the chest. Behind, these ribs are loosely attached to the bodies of the Thoracic portion of the

backbone. On account of this loose attachment the ribs are free to move with each act of breathing, as the lungs expand under them, when filled with air. The ribs, the breastbone, the spine etc. make up a cage-like body, within which lie the heart, the lungs, the blood vessels, the food pipe


The Ribs.

etc. These organs completely fill the chest cavity. The lungs, however, are the biggest of these, and almost cover the other organs, so much so, that if the ribs are cut open, the lungs come in sight first, and the heart is only partially visible between them. The lungs are therefore next to the ribs, that is, remain just under the ribs. A thin and shining layer of membrane, called the pleura is first laid over the under surface of the ribs, and is then spread over the lungs, as a covering. This membrane is like a thin sheet of glazed paper, but unlike it is always kept moist by a fluid secretion of the body, so that when the chest wall and the lungs move with respiration, they do not rub against each other. In health, there is hardly any space left between these two layers of Pleura, but in disease, the fluid that keeps the Pleura moist, may increase in volume and collect between the two layers. Even pus may accumulate in that space. These conditions are known as Pleurisy and Empyema. The lungs naturally shrink and fall back from the ribs and chest wall in those states.

It will now be of interest to deal with the organs that occupy the chest cavity, one by one. The lungs come first, as described. They are two in number, one on each side of the chest, each lung extends from the upper part of the chest to the Diaphragm below, which is a muscular partition between the Thorax and the Abdomen. The right lung is divided into three portions, the upper, the middle, and the lower, and the left lung into an upper and a lower only. These divisions are called lobes of the lung. The upper lobe called the apex, occupies the upper part of the chest as far as the root of the neck, about an inch above the collar bone, called the clavicle. The middle and lower lobes occupy the rest of the chest and back. The lungs are soft and sponge like in appearance because they contain air within them. The work of the lungs is to expand and shrink alternately, as the air enters and comes out from them, during respiration. The act of breathing, or respiration as it is called is a very interesting matter. Respiration has got two phases, the Inspiration and the Expiration. Inspiration means the taking in of air, and expiration means the giving out of the air from the lungs. The air that we breathe is composed of mainly two gases, the Oxygen and the Nitrogen,

a little quantity of water vapour, and dust etc. When the air is drawn in, the lungs select only the Oxygen gas from it and utilise it in purifying the blood. The purification of blood is accordingly called Oxygenation. How this purification takes place within the lungs is another interesting subject and will be described presently. It will be shown in the next few lines, how the other important organ of the chest, the Heart, has got a two fold action. It first receives the blood, from all parts of the body, made impure and dark, by mixing with the waste materials of the body, it then pumps out this impure and dark blood to the lungs by means of blood vessels called Pulmonary vessels, the word Pulmonary is a Latin name for the lungs, where during the act of inspiration, the oxygen from the air mixes with the blood in the vessels and oxygenates or purifies it and turns it red. This purified blood again returns to the heart for supplying the body. The air which is exhaled or given out by the lungs, consists of a different gas known as the the Carbon-di-Oxide gas formed in the body with the oxygen that is inhaled. As the Carbon-di-oxide gas is not very useful to the system, most of it is given out by the lungs again, during exhalation. But the oxygen is absolutely necessary for life, as it not only purifies the blood, but it also produces heat in the body, which keeps it warm. The oxygen is available plentifully in open and pure air. If the air we breathe is polluted, our lungs will catch infection of diseases, like Influenza, Pneumonia and Tuberculosis. The value of fresh air should therefore, be realised by every body.

The next and equally important organ inside the chest is the Heart. It is called the life of the body, as it feeds the body, gives it strength and warmth. If the heart stops for a moment, the body becomes inert, and if it ceases to work, life extincts in a short time. The heart remains on the left side of the chest, partly covered by the left lung. Only a portion of the heart lies directly beneath the chest wall. It is near the left nipple in the male, and below the breast in the female. In a thin chest wall, the heart will be found to move in that area, and if one places his ear over the chest at that place, one will be able to hear the heart-beating. He will hear two sounds, one after another. It is because the heart has got double actions like the lungs namely, alternate expansion and contraction. The heart is a small hollow muscular bag, containing four compartments within it, divided into two halves, by a muscular partition. Each half, therefore, contains two chambers one upper and one lower, and each half is described as the right and left side of the heart. The upper chamber of the right side receives all the impure blood from the body, and passes it to the lower chamber, from where it is pumped out to the lungs for purification, as previously described, and the blood after purification is sent back to the upper chamber of the left side of the heart, from which it passes to the lower chamber for distribution to the whole body. The upper chambers of the heart are called the Auricles and the lower ones, the Ventricles.

It will now be described by what means the blood is carried to the heart and pumped out again in distribution. This is carried only by means of blood vessels which are hollow

tubes, soft and elastic like the ordinary rubber tubes. These vessels are connected to the heart and lungs, have got branches all over the body for distribution of blood. There are two kinds of blood vessels, one for the passage of impure blood and the other for carrying pure blood. Those which carry impure blood are called veins and those which contain pure blood are known as arteries. The veins are thin and blue in colour, on acconnt of the presence of impure dark blood in hem. Blood passes quietly in the veins and no movement is therefore seen in them, but it passes with jerks in the arteries as the heart pumps out the pure blood with a certain force, called pressure. A movement is thus noticed in the arteries which is known as pulsation. The condition of the heart is, therefore, judged by feeling this pulsation of the arteries. Some of these blood vessels are seen under the skin on various parts of the body. The veins are more easily seen than the arteries which generally remain deep seated under the muscles, for protection. The veins are very easily seen in the arms and legs. They lie next to the skin, and present themselves as zig-zag tubes with several branches. In a fair skinned person some of the small veins appear blue, the exact colour of the veins. Some of the arteries are also to be found superficial, such as the artery near the wrist, which is called the Radial artery or the Radial pulse. This pulse is felt during fever, to ascertain the height of the fever and in other conditions to test the condition of the heart, by doctors. Some of the big arteries of the neck may also be found to pulsate by the side of the Trachea or windpipe, if carefully watched. Something should be said now about the blood itself of which we have been speaking so long. The blood that passes in the veins and arteries is a thick liquid in appearance, but it consists of two substances, one liquid substance which is thin and watery, is called the serum. The other solid portion consists of very minute discs of two kinds of which one is white and the other-red. The red colour of blood is due to the presence of these red discs. These discs are called blood cells, and are not visible to the naked eye, they can only be seen with the help of a microscope, a high power glass, which can make invisible things visible to the eye. The blood cells are therefore called the white and red cells or corpuscles. The red cells contain Hæmoglobin, which is iron in organic state, *i.e.*, combined with a living organ. The nourishment of the body depends on the richness of this Haemoglobin in the blood. The white discs defend the body from the invasion of germs, which they kill and devour. Blood is, therefore, the vital fluid of the body. Its vigour is maintained by the richness of the blood, whereas, poverty of blood brings weakness, pallor and all kinds of diseases. Food rich in iron should therefore be taken plentifully.

Besides the heart, lungs and the blood vessels, the chest cavity contains part of the Trachea and the Oesophagus. The Trachea or wind pipe ends in the chest, about its middle and divides into two main branches called the Bronchus which in turn divide into several branches mingling themselves with the two lungs, which are formed out of these branches themselves. These branches look like the branches of a tree as they end in

leaves. A diagram of the Trachea dividing itself into the two Bronchii and the innumerable branches of these Bronchii entering the lung substance has already been shown in the chapter on throat. The Oesophagus or the food pipe passes behind the heart and lungs straight into the Abdominal cavity, through a hole in the Diaphragm, the partition wall between the chest and abdomen, to join with the stomach.

Topics of Interest from Health Periodicals

Rules for the Care of the Feet

1. Wash the feet daily with soap and warm water.

2. Dry the feet thoroughly, especially between the toes using pressure rather than rubbing.

3. When thoroughly dry, rub with lanolin as often as necessary, to keep the skin soft and free from dryness and scales, but never render the feet tender. If the feet become too soft, rub once a day with spirit.

4. Always keep the feet warm. Use woollen socks or lined shoes in winter; white cotton socks in warm weather. Use a clean pair of socks each day. Use bed socks instead of hot-water bottles.

5. Wear properly fitting shoes. Be particularly careful that they are not too tight. Wear new shoes one-half hour only on the first day, and increase one hour daily.

6. Cut the toe nails only in a good light, and only after the feet have been washed. Cut the toe nails straight across.

7. Do not cut corns or calluses.

8. Do not wear circular garters, or sit with the knees crossed.

9. Do not use strong antiseptics on the feet; particularly never use lysol, tincture of iodine, or carbolic lotion.

10. Give prompt first-aid treatment, even in apparently minor injuries.

11. Consult the doctor at the first signs of a blister or inflammation of the feet.—*The General Practitioner.*

Insect Pests.—Termites eat wood; moths and beetles attack our clothes, furniture and stored food; mosquitoes carry malaria; houseflies carry typhoid, fever, dysentery, cholera and tuberculosis; lice carry typhus; and the coddis fly is responsible for much asthma. However, only about 300 out of 500,000 kinds of insects are our enemies.

Our Insect Friends

Some insects are friends to man. Insects carry the pollen to fertilize the fruit and grain; they produce silk, honey, beeswax and dyes; they destroy dead and decaying matter. It is said that three flies with their progeny will devour a dead horse as quickly as a lion. From the cochineal insect we get red dyes, and from the lac insect we get sealing wax and shellac.

It was discovered during the World War that fly maggots in a wound eat up the bits of dead tissue and prevent the formation of pus. In many hospitals sterile fly maggots are now deliberately placed in inaccessible wounds to keep them clean. Recently two physicians ground up maggots and made an extract which gives remarkable cures in sinus and mastoid infections where live maggots cannot be used.

For many years doctors have known that bee stings benefit rheumatism, but the treatment was rather severe. Now they have made an extract of venom which gives remarkable results without pain.—*The Treasure Chest.*

" Early " Symptoms of Pulmonary Tuberculosis.—Inasmuch as Christopher J. Stringer has observed (*Med. Times*) that a very high percentage of patients admitted to sanatoria for the treatment of pulmonary tuberculosis are in the *far advanced stage* he makes a plea for the early diagnosis of tuberculosis. Even when the following symptoms occur the disease is probably quite advanced.

1. *Cough.* This is the most prevalent single symptom. In 25 per cent it is the initial symptom. It occurred in 77 per cent before the physician was consulted. Regard with suspicion all coughs that extend over two weeks. Do not overlook the fact that 23 per cent have no cough at the onset.

2. *Expectoration.* May exist alone in 46 per cent.

3. *Fatigue.* The initial symptom in 23 per cent. It was present in 42 per cent of his series.

4. *Weight loss* in 41 per cent.

5. *Pleurisy* in 46 per cent.

6. *Head colds.* Initial symptom in 21 per cent.

7. *Blood spitting.* Occasionally the first symptom. About 21 per cent who consulted a physician had blood spitting of some degree.

8. *Night sweats.* As an early symptom only in 15 per cent.

9. *Gastro-intestinal.* Nausea and a feeling of heaviness (12 per cent). Later on, gastro-intestinal symptoms are more common.

10. *Hoarseness.* In only ten per cent is it an early symptom.

11. *Difficulty in Breathing.* Very rare.

12. *Fever.* A large percentage of cases with active lesions may be afebrile. (An afternoon fever is usually regarded as suspicious.—Ed.)

He stresses the fact that the diagnosis of pulmonary tuberculosis is missed frequently by the first physician consulted. Also the tendency to treat the patients symptomatically, *e. g.*, for their hoarseness, cough, head and chest colds, without considering the possibility of tuberculosis of the lungs.

EDITOR'S NOTE : Any person complaining of one or more of the above symptoms (which are persistent) should have an X-ray of the chest to detect any pulmonary pathology and the sputum should be *repeatedly* examined for any acid-fast tubercle bacilli.—*The Doctor Od Quarterly.*

A Forgotton Health Secret.—By R. T. Bolton.—Health is not wholly a matter of obedience to the laws which govern our physical being, else our doctors would be more successful in their healing ministry.

This is because man is a triune being made up of body, mind, and spirit, each part being governed by laws particularly suited to it. However, it should be remembered that these different codes of law do not work independently of each other, but are interdependent.The breaking of a single law of any one of these codes introduces disharmony into the

human trinity, and any disharmony spells ill health.

Our doctors instruct us as to the laws of our physical being but at the same time they pay considerable attention to the harmonious working of the whole trinity. We, with our aches and pains, think only of one or another of our bodily organs, supposing that they are the root cause of our ills. But it may be that the cause is in the realm of the mind or spirit, though through the interdependence and co-ordinate working of the trinity of laws our sickness manifests itself in the physical part of our being. For the same reason, a physical injury or disease may manifest itself in some mental disorder.

These facts emphasize the importance of maintaining a healthy mind and a bright and happy spirit.

Perhaps nothing will help so much in building up the mental and spiritual parts of our being as that much neglected book, the Bible.

For example, there is no better prescription for a disordered mind than the following: "Whatsoever things are true, whatsoever things are honest, whatsoever things are just, whatsoever things are pure, whatsoever things are lovely, whatsoever things are of good report; if there be any virtue, and if there be any praise think on these things." Phil. 4 : 8.

If fear, no matter what its cause. has weakened the mind and crushed the spirit, then we are told to "fear not, for I am with thee, be strong and of good courage, neither be thou dismayed." "Trust in the Lord, and do good; ... and verily thou shalt be fed." No weapon that is formed against thee shall prosper."

These and similar passages, will, in many cases, do more to heal the mind, revive the spirits, and so bring harmony and health into the whole being than the combined skill of medical science.

It is too often forgotten that hatred, harbouring a grudge, nursing resentment, impure thoughts and actions, in short, the violation of any moral law, plays as great a part in the disturbing of bodily functions as improper dietetic habits. The good old Book calls the above acts sin, but sin is an old-fashioned and unpopular term to-day.

Let us trust in the Lord and do good, for herein lies one of the secrets of radiant health. — *Good Health (London).*

Charles Kingsley's Apostrophe to Tobacco.—*The New Orleans Times Picayune* publishes the following:

"Kingsley's apostrophe is as follows: 'When all things were made, none was made better than tobacco; to be a lone man's companion, a bachelor's friend, a hungry man's food, a sad man's cordial, a wakeful man's sleep, and a chilly man's fire. There's no herb like it under the canopy of heaven'."

According to Kingsley, probably judging from his own personal experience, the filthy weed, tobacco, is a better companion for a lone man than any other; the best of all friends for a bachelor; the best food for a hungry man; the best comfort for a sad man; the best source of warmth for a chilly man.

It is hard to believe that so intelligent a man as Charles Kingsley is reputed to have been could have given utterance to such an amazingly absurd statement. In concluding his apostrophe by saying, "There is no other herb like it under the canopy of heaven," he told the truth. It stands at the head of noxious weeds and enjoys pre-eminence only because of its superlative badness—one of the most deadly of all poisons and most nauseous of all stenches. — *Good Health (U. S. A.)*

Health Tit-Bits

Eggs Restore Eyesight.— Many thousands of people in China lose their eyesight from a disease called xerosis. The eye dries up and becomes rough, and soon the sight is lost.

It has been found that in the early stages the disease can be cured within a week by a diet that includes three eggs daily.—*The Treasure Chest.*

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Health.—Health should mean more than freedom from disease. It should be a positive, compelling force, radiating enthusiasm in which individual is at his maximum efficiency, in harmony with both mental and physical environment.—*Health & Happiness.*

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Dr. Hindhede's Idea of a Happy Life.—In an article in an English magazine, Doctor Hindhede, the famous food commissioner of Denmark, maintains that artificial pleasure not only shortens life but actually lessens the joy of living. To die at the age of fifty, after having "enjoyed" life, signifies as a rule that the last ten years have been passed in suffering. The real enjoyment of life is inseparable from health and a feeling of fitness and freedom from the ennui, headaches, depression and other miseries which always follow surfeits, midnight revels and other violations of biologic law.

In a proper state of health, one awakes each morning with an indescribable feeling of well-being—the mere fact of living should be glorious. Simple and unmixed foods, such as graham bread, potatoes, milk, butter, greens and fruit are the most wholesome. Biologic feeding is a fine art. Rising from a meal, you should feel perfectly ready to work.

This joy of life is found in reality only among uncivilized people and among simple country folk and children. Modern culture has ruined the muscular and nervous systems.—*S. Good Health (U.S.A.)*

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The Canarese Diet.—The diet of the poorer classes seems to be nutritious and cheap. Ragi is a better cereal food for it is cooling and contains nune, bran and easily digestible proteins. If Ragi is allowed to germinate and *Doseh* or *Rotti* is prepared out of it, the *rotti* seems to be easily digestible and good for health. In the Canarese diet use of chillies and tamarind is less prevalent.

In some parts of the country a mixture of Ragi and broken rice is being used, and cooked food. In some of the Festival preparations good dishes are made wherein cocoanut and ground-nut enter into food ; they are very tasteful and light and good for health.

As the temperature rises there is a natural tendency and demand for liquids than solids. The best muscular bodies of Physical Culturists (K. V. Iyer and his students) are being built on the ordinary diet.

I beg to say that there is the possibility of building up good physique even on ordinary simple diet. Be simple and practise some of them to get success :

Observe and practise ; believe and do some of them to reach the goal. Simple vegetable preparations seem to be very helpful for rapid development and health.—*V. M. Rao*, N.D., D. Ph. etc. — *The Indian Naturopath.*